

Application No.: 10/767,476
Filing Date: January 28, 2004

REMARKS

Claims 29-59 and 76-120 are currently pending. Claims 1-28 and 60-75 are canceled without prejudice or disclaimer. Applicants reserve the right to pursue the subject matter of any or all of the canceled claims in one or more continuing applications.

Claims 29, 41 and 51 are currently amended. Support for the amendments to independent claims 29 and 41 can be found in the claims and specification as originally filed. In particular, support for the amendments to independent claims 29 and 41 can be found at page 6, lines 25-28, page 6, lines 30-34, page 13, lines 4-7; at Figure 1A and Figure 1B; and elsewhere throughout the specification as originally filed. Dependent claim 51 is amended to correct a typographical error. Accordingly, no new matter is added by way of the instant claim amendments.

Claims 76-120 are new. Support for new claims 76 to 120 can be found in the claims and specification as originally filed. In particular, support for new dependent claims 76, 78, 84, 99 and 113 can be found at page 24, lines 30-31 and elsewhere throughout the specification as originally filed. Support for new dependent claims 77, 79, 94 and 117 can be found at page 10, line 9 and elsewhere throughout the specification as originally filed. Support for new independent claims 80 and 108 can be found at page 5, line 36 to page 6, line 35; Figure 1A and Figure 1B; and elsewhere throughout the specification as originally filed. Support for new independent claim 95 can be found at page 5, line 36 to page 6, line 35; Figure 1A and Figure 1B; page 10, line 9; and elsewhere throughout the specification as originally filed. Support for new dependent claims 81-83, 96-98 and 110-112 can be found at page 6, lines 2-8 and elsewhere throughout the specification as originally filed. Support for new dependent claims 85-87, 100-102 and 114-116 can be found at page 4, lines 7-26 and elsewhere throughout the specification as originally filed. Support for new dependent claims 88, 89, 103 and 104 can be found at page 6, lines 16-18; Figure 1A and Figure 1B; and elsewhere throughout the specification as originally filed. Support for new dependent claims 90, 105 and 118 can be found at page 13, lines 4-14 and elsewhere throughout the specification as originally filed. Support for new dependent claims 91, 106 and 119 can be found at page 11, lines 2-6 and elsewhere throughout the specification as originally filed. Support for new dependent claim 92 can be found at the paragraph bridging pages 9 and 10 and elsewhere throughout the specification as originally filed. Support for new dependent claims 93, 107 and 120 can be found page 4, lines 14-15 and elsewhere throughout the

specification as originally filed. Support for new dependent claim 109 can be found at page 3, lines 17-29 and elsewhere throughout the specification as originally filed. Accordingly, none of the newly added claims constitutes new matter.

After having carefully considered the final Office Action issued August 21, 2008, Applicants respectfully traverse the claim rejections sets forth therein.

Rejection of claims 29-38, 40-48, 50-53, 55-57 and 59 under section 35 U.S.C. § 103(a)

The Examiner rejects claims 29-38, 40-48, 50-53, 55-57 and 59 as allegedly obvious under 35 U.S.C. § 103(a). In particular, the Examiner asserts that Michael et al (1998) *Analytical Chemistry* 70: 1242-1248 (Michael et al.) discloses fiber optic sensor arrays comprising bundles of fiber optics wherein each fiber is etched to create a well in which a microsphere with bioactive agents is placed. Furthermore, the Examiner alleges that Michael et al. disclose that the fiber optic bundles can be dipped from above into a sample well. Although the Examiner acknowledges that Michael et al. do not disclose multiple sample wells or a substrate having a plurality of fiber optic bundles, the Examiner alleges that these features are disclosed by U.S. Patent No. 6,646,272 (Rushbrooke et al.). Furthermore, the Examiner alleges that U.S. Patent 7,142,290 (Tsien et al.) disclose 3456 well plates and multiple fiber optic bundles arranged in a holder. The Examiner then contends that a skilled artisan would have been motivated to combine the disclosures of the three cited references with a reasonable expectation of success because Rushbrooke et al. and Tsien et al. allegedly disclose advantages to utilizing multiple fiber optic bundles with multiwell plates and Michael et al. allegedly disclose results showing that a single fiber optic bundle can act to detect analytes. Finally, the Examiner also asserts that the subject matter of the above-rejected claims would be obvious because adapting the arrays disclosed by Michael et al. for use with multiwell plates would have allegedly yielded predictable results.

Applicants do not agree that subject matter recited in claims 29-38, 40-48, 50-53, 55-57 and 59 prior to the instant amendment is obvious over the combination of the above-cited references. However, in order to move this application to allowance, Applicants have amended independent claims 29 and 41 to recite, in relevant part, that said first substrate and said second substrate are arranged such that projections of said second substrate are fitted into assay wells of

the first substrate. None of the above-cited references disclose or suggest a second substrate having projections that are fitted into assay wells of the first substrate. Furthermore, the subject matter disclosed in the above-cited references cannot be combined so as to arrive at the subject matter set forth in independent claims 29 and 41.

The subject matter recited in the above-rejected claims relates to two-component array compositions. As can be seen from Figure 1A and Figure 1B of the specification, preferred embodiments relate to a two-component product where the first component is designed to include wells for holding samples and where the second component includes array-containing projections that are designed to fit into the wells of the first component. This design permits a multiplicity of reactions, such as hybridization reactions, to be performed in a single device.

The Examiner specifically alleges that claims 29-38, 40-48, 50-53, 55-57 and 59 are obvious over the combination of three separate references. The first reference is a publication by Michael et al. that discloses a fiber optic bundle etched at one end so as to form a microwell at the end of each of the individual optical fibers of the bundle (see Figure 4 of Michael et al.). The microwells contain a microsphere having avidin, biotin or the enzyme, alkaline phosphatase attached thereto (see Figure 5 of Michael et al.) The end of the bundle that has not been etched is attached to a detector, such as a charge coupled device (CCD) camera. The end of the bundle containing the microspheres can be used to detect the presence of a target analyte.

The second reference, on which the Examiner relies, is U.S. Patent No. 6,646,272 (Rushbrooke et al.). Rushbrooke et al. disclose a fiber optic device for detecting luminescent samples. The device contains multiple fiber optic bundles that are attached at one end to a detector. At the other end, the bundles are positioned so that the end of each bundle abuts with the bottom of a sample plate (see, for example, Figure 3, Figures 5-9 and column 10, lines 40-45 of Rushbrooke et al.) or abuts with a transparent plate placed between the end of each bundle and the sample plate (see, for example, Figures 10 and 11 of Rushbrooke et al.). This positioning is necessary so that light emitted from the sample can be directed into the appropriate fiber bundles (see column 4, lines 57-64 of Rushbrooke et al.) and so that the fiber bundles can be moved along the bottom surface of the sample plate to receive signal from various regions on the plate (see, for example, see Figures 6 and 7 and the paragraph bridging columns 11 and 12).

The third reference cited by the Examiner is U.S. Patent No. 7,142,290 (Tsien et al.). Tsien et al. disclose fiber optic bundles set into an assembly that positions one end of each bundle against a ball lens (see, for example, Figure 5 of Tsien et al.). The other end of each bundle is attached to a detector. The assembly end containing the ball lenses is then placed at the bottom of a microtiter plate to receive light that is transmitted through the transparent bottom surface of the plate (see, for example, Figure 2 and column 6, lines 25-29 of Tsien et al.). The assembly is then moved along the plate so as to scan various regions of the plate (see, for example, column 5, lines 42-46 and column 10, lines 36-38 of Tsien et al.).

None of the above-cited references, alone or in combination, disclose or suggest all of the elements of any of the above-rejected claims. Before discussing this fact, however, Applicants would like to point out that U.S. Patent No. 6,646,272 (Rushbrooke et al.) is not prior art to the above-rejected claims. In particular, Rushbrooke et al. does not have an effective filing date of July 4, 1997 because it is a continuation of a U.S. national phase application having an international filing date prior to November 29, 2000. Accordingly, the Rushbrooke et al. reference can be effective as prior art only as of the § 371 date of the U.S. national phase application, which is July 26, 1999. Since July 26, 1999 is well after the priority date of the instant application, Rushbrooke et al. is not prior art to the above-rejected claims.

As stated above, none of the above-cited references, alone or in combination, disclose or suggest all of the elements of any of the above-rejected claims. In particular, each of independent claims 29 and 41 recite that projections of the second substrate are fitted into wells of the first substrate. No combination of the above-cited references discloses or suggests such an element. Although, Rushbrooke et al. is not prior art to the claimed subject matter, because the fiber optic bundle assemblies disclosed by Rushbrooke et al. and Tsien et al. are similar, both of the references are discussed here together. Both Tsien et al. and Rushbrooke et al. each disclose an assembly of fiber optic bundles. Although each of these assemblies is used to detect light emitted from wells of microtiter plates, neither is suitable for use in the two component systems set forth in the above-rejected claims. Both the Tsien et al. and Rushbrooke et al. devices work by scanning the bottoms of microtiter plates with the fiber optic bundle assembly. The scanning ends of the bundles of Tsien et al. are modified with a ball lens and those of Rushbrooke et al. are typically covered with a glass plate. In addition, the scanning ends of the bundles are arranged to

be substantially co-planar with the surface of the assembly in order to facilitate scanning (see for example, Figure 6 of Tsien et al. and Figure 3 of Rushbrooke et al.). That is, both the Tsien et al. and Rushbrooke et al. devices are specifically adapted to move along the underside of the microtiter plates and to detect light that is emitted from the bottom of the plates. Neither of these devices provides a substrate having projections that are, or can be, fitted into the wells of first substrate. Thus, even if we assume, *arguendo*, that a skilled artisan would be motivated to combine fiber optic bundles disclosed by Michael et al. with the assemblies of Tsien et al. and/or Rushbrooke et al., the combination would not disclose all of the limitations of the claims since the fibers could not be fitted into the wells of the first substrate. Accordingly, the above-cited combination of references does not render of claims 29-38, 40-48, 50-53, 55-57 or 59 obvious.

In addition to the foregoing, a skilled artisan would not be motivated to combine the fiber optic bundle arrays disclosed by Michael et al. with the devices of Tsien et al. and Rushbrooke et al. In fact, Michael et al. teach away from such a combination because Michael et al. teach away from using a plurality of bundles to increase the capacity of sensor arrays. Instead, Michael et al. state that any expansion of sensor elements should be done by creating a larger bundle (see, Michael et al. at page 1245, first column). Accordingly, Michael et al. teach away from increasing array capacity by using multiple bundles.

Finally, it is worth noting that the devices disclosed by Tsien et al. and Rushbrooke et al. cannot be modified to meet the limitations of claims 29 or 41 without rendering those devices unsuitable for their intended purpose. As discussed above, both the Tsien et al. and Rushbrooke et al. devices are designed to scan along and read light from the bottoms of microtiter plates. Fitting fiber optic bundles into wells of a microtiter plate would not allow the assembly to move with respect to the plate. Accordingly, the assembly could not scan along the plate to read individual columns of wells as disclosed in Tsien et al. and Rushbrooke et al. Furthermore, fitting fiber optic bundles into wells from the top destroys the most significant advantage of both Tsien et al. and Rushbrooke et al., which is to allow reagents to be added to the wells, while at the same time detecting light changes in light emission (see for example Tsien et al. at column 5, lines 42-46). Accordingly, the devices disclosed by Tsien et al. and Rushbrooke et al. cannot be modified to meet the limitations of claims 29 or 41 without rendering those devices unsuitable for their intended purpose.

In summary, Applicants submit the following: (1) U.S. Patent No. 6,646,272 (Rushbrooke et al.) is not prior art to the above-rejected claims; (2) no combination of the above-cited references teach all of the elements of independent claims 29 or 41 because the devices disclosed by Tsien et al. and Rushbrooke et al. do not have projections that are fitted into wells of a first substrate; (3) Michael et al. teach away from using a plurality of fiber optic bundles to scale up array capacity; (4) the devices disclosed by Tsien et al. and Rushbrooke et al. cannot be modified to meet the limitations of claims 29 or 41 without rendering those devices unsuitable for their intended purpose.

In view of the foregoing remarks, Applicants respectfully request that the Examiner withdraw the rejection of claims 29-38, 40-48, 50-53, 55-57 and 59 as obvious under 35 U.S.C. § 103(a).

Rejection of claims 29-35, 37-39, 41-45, 47-49 and 51-59 under section 35 U.S.C. § 103(a)

The Examiner rejects claims 29-35, 37-39, 41-45, 47-49 and 51-59 as allegedly obvious under 35 U.S.C. § 103(a). In particular, the Examiner asserts that International Application Publication No. WO97/27326 (Pinkel et al.) discloses a first substrate comprising assay wells having targets and a second substrate made of a fiber optic bundle having different biological binding partners directly attached at the end of each fiber of the bundle. Although the Examiner acknowledges that Pinkel et al. do not disclose multiple sample wells or a substrate having a plurality of fiber optic bundles, the Examiner alleges that these features are disclosed by U.S. Patent No. 6,519,032 (Kuebler et al.). The Examiner then contends that a skilled artisan would have been motivated to combine the disclosures of Pinkel et al. and Kuebler et al. with a reasonable expectation of success because Kuebler et al. allegedly disclose advantages to utilizing multiple fiber optic bundles with multiwell plates and Pinkel et al. allegedly disclose that a fiber optic bundle can be used for both detection and target deposition. Finally, the Examiner also asserts that the subject matter of the above-rejected claims would be obvious, because adapting the arrays disclosed by Pinkel et al. for use with multiwell plates would have allegedly yielded predictable results.

Applicants do not agree that subject matter recited in claims 29-35, 37-39, 41-45, 47-49 and 51-59, either prior to or subsequent to the instant amendment, is obvious over the above

cited references. In particular, Applicants must point out that Kuebler et al. does not disclose the material alleged by the Examiner as of the asserted effective filing date. Kuebler et al. is a continuation-in-part of U.S. Patent No. 6,175,409 (the '409 patent), which was filed April 2, 1999. The '409 patent claims priority to U.S. Provisional Patent Application No. 60/080,652 (Kuebler et al. provisional), filed April 3, 1998. The '409 patent claims priority to no other patent applications. From a close inspection of the Kuebler et al. provisional, it is abundantly clear that a multicomponent system comprising multiple fiber optic bundles is not described. In fact, the Kuebler et al. provisional does not even disclose a single fiber optic bundle. At best, the Kuebler et al. provisional discloses a single autosampler for liquid chromatography systems (see pages 15, 16 and Figure 2 of the Kuebler et al. provisional). Since the Kuebler et al. provisional does not disclose the subject matter on which the Examiner relies, Kuebler et al. is not entitled to benefit of the filing date of the Kuebler et al. provisional application. As such, the earliest possibility for disclosure of the material upon which the Examiner relies is the filing date of the '409 patent.

At this point, it is worth noting that the priority date of the instant application is December 28, 1998. This date is well prior to the filing date of the '409 patent, which is April 2, 1999. As such, even if we assume, *arguendo*, that the '409 patent discloses the subject matter alleged by the Examiner, the filing date of the '409 patent is subsequent to the priority date of the instant application and such disclosure cannot be used as prior art since it was not present at the time of filing the Kuebler et al. provisional. As such, the above-cited references do not disclose the subject matter on which the Examiner relies prior to the priority date of the instant application, and thus, cannot render claims 29 and 41 obvious.

In view of the foregoing remarks, Applicants request that the Examiner withdraw this the rejection of claims 29-35, 37-39, 41-45, 47-49 and 51-59 under 35 U.S.C. § 103(a).

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this

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application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

Applicants believe that all outstanding issues in this case have been resolved and that the present claims are in condition for allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is invited to contact the undersigned at the telephone number provided below in order to expedite the resolution of such issues.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: 
Jerry L. Hefner
Registration No. 53,009
Attorney of Record
Customer No. 20995
(619) 235-8550

6621513.021009